Rapidly delivering war-winning capability

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U.S. AIR FORCE

Long Range Global Precision Engagement (LRGPE) Discussion with Industry
17 Jan 03

Disclaimer

- **The LRGPE-VICC (Virtual Industry Capability Call) is not to be construed as an acquisition Request For Information (RFI) nor is any commitment on the part of the Government to award a contract implied, nor does the Government intend to pay for any information submitted as a result of this request.**

Overview

- **Operational Environment and Effects**

- **Capability Gaps**

- **LRGPE Capability Classes**

- **Concept Description Template**

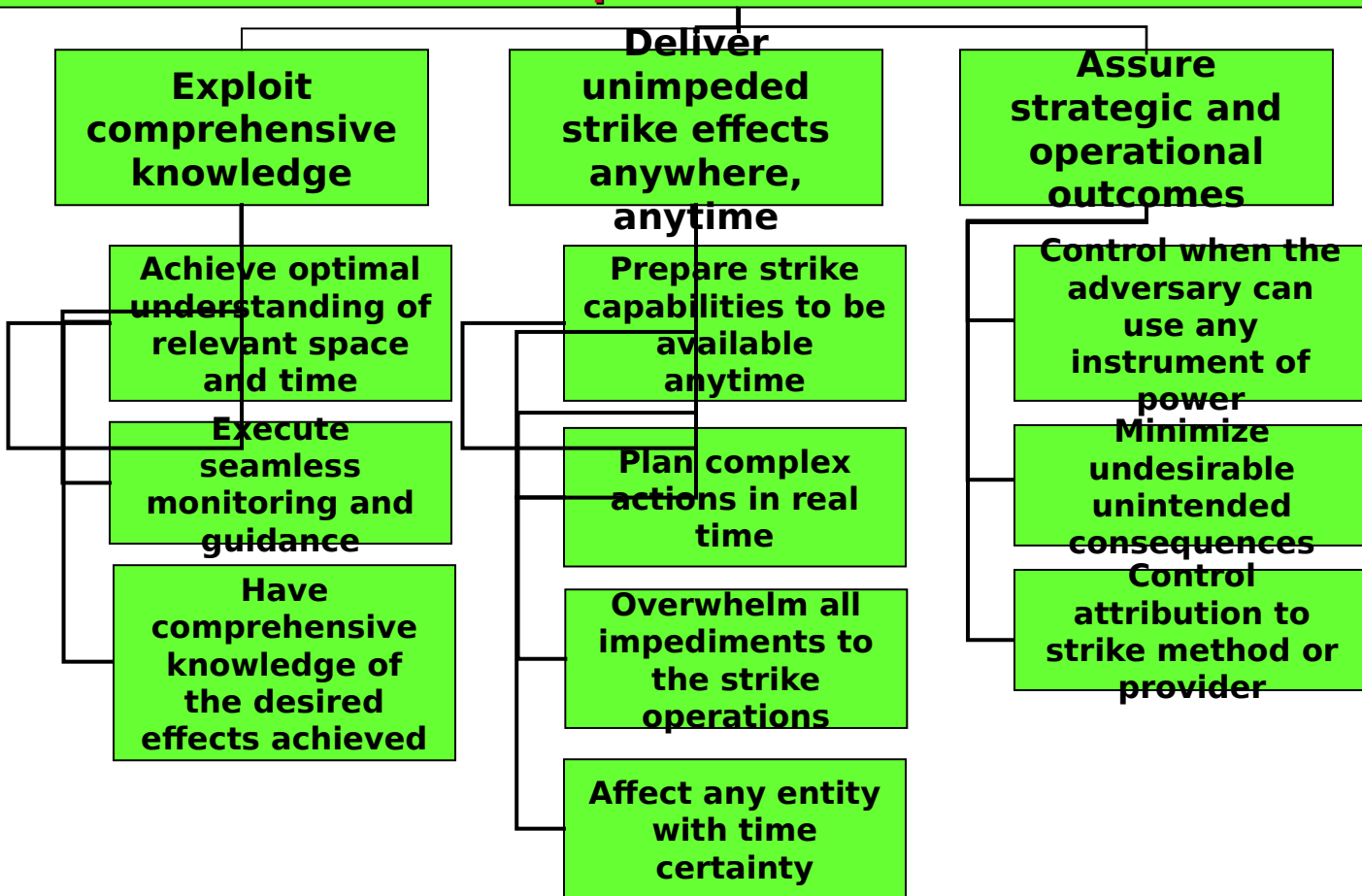- **Summary**

Anti-Access Environment

1. **Minimal build-up times**

2. **No/minimal land or sea points of debarkation 1000 NM from target(s) due to TBM threats capable of delivering CBRNE payloads**

3. **Non-stealthy, unenhanced air platforms vulnerable within 150-200 NM from shore lines due to advanced integrated air defense systems (IADS)**

4. **Ships may be vulnerable within 500-1000 NM**

5. **No/minimal forward basing (within 1000 NM) before hostilities begin**

6. **Anti-access threat never completely eliminated...forces will have to operate within anti-access (i.e., TBM, IADS) threat at acceptable level of risk**

7. **A primary objective is to bring effects to battlespace that disrupt & destroy adversary from first moment of conflict & throughout**

Joint LRGPE Effects Framework

Acquire and provide strike effects to achieve desired objectives with complete confidence

Exploit comprehensive knowledge

- Achieve optimal understanding of relevant space and time
- Execute seamless monitoring and guidance
- Have comprehensive knowledge of the desired effects achieved

Deliver unimpeded strike effects anywhere, anytime

- Prepare strike capabilities to be available anytime
- Plan complex actions in real time
- Overwhelm all impediments to the strike operations
- Affect any entity with time certainty

Assure strategic and operational outcomes

- Control when the adversary can use any instrument of power
- Minimize undesirable unintended consequences
- Control attribution to strike method or provider

Joint Strike Capability Gaps

1. **Counter Anti-air Defenses (IADS, laser, EW, EMP, aircraft)**
   1. **Sanctuary for forward force protection**
2. **Counter Anti-access Maritime Defenses (mines, subs, missiles)**
3. **Affect hard & mobile targets prior to red employment (TST)**
   1. **In-flight reprogrammable variable effect weapons**
   2. **Rapid weapon-target pairing to achieve desired effect**
4. **Neutralize enemy CBRNE without unwanted consequences**
5. **Ability to conduct operations over extended ranges**
   1. **Air refueling to extend range/increase payload**
   2. **Strategic and operational lift (air and sea)**
   3. **Survivable tactical lift (SOF infil/exfil)**
   4. **Integrated logistics processes and speed**
6. **Lack of "practiced" Joint doctrine/CONOPs (Joint Concepts and Initiatives)**

Joint C4ISR Capability Gaps

1. **PBA to understand relationship of effects and consequences**
2. **Establish, maintain battlespace situational awareness**
    1. **Data collection, fusion, and knowledge management**
    2. **Coordinate command and control of joint fires**
    3. **Common operational picture**
3. **Integrated DoD/National ISR/targeting**
    1. **Common DoD/National automated tools to task/execute ISR**
4. **Joint C4ISR capability (includes CONOPs, bandwidth, and connectivity)**
    1. **Timely feedback (BDA/BIA)**
    2. **Operate, protect information networks**
    3. **Decision process support**
5. **Control enemy ability to act on knowledge/information**
    1. **Deny enemy situational awareness of red and blue forces**

LRGPE Study Scope: Capability Class Focus

- **Objective: Generate strategic effects from the beginning of operations**

- **Three capability classes**
  - **Prompt Global Strike**
  - **Rapid Strategic Effects**
  - **Persistent Theater Dominance**

  Note: Descriptions that follow are meant to stimulate creative thought, not restrict the range of solutions.

LRGPE Capability Class I: Prompt Global Strike

- **Objective: Generate strategic shock**

- **Operational Responsiveness: 0 to 10 Hours (Postured/Unpostured)**

- **Targets classes of primary focus *(illustrative only)***
  - **Hardened infrastructure (e.g., command and control facilities)**
  - **Fixed/fixable Integrated Air Defense System (IADS) elements**
  - **Theater ballistic missile (TBM) launchers**
  - **WMD storage**

- **Quantity of strike effects (volume): 1-200**

LRGPE Capability Class I: Prompt Global Strike (Cont.)

- **Contributing concepts**
  - **Weapons Delivery**
    - **Supersonic/hypersonic platforms**
    - **Surface & Sub-Surface Launch for long range weapons**
    - **Electronic/Infrastructure Attack**
  - **Advanced munitions**
    - **Agent defeat weapons**
    - **Weapons Capable Against Hard and deeply buried targets**
    - **Directed energy (e.g., tactical laser and high powered microwave)**
    - **Long range, in-flight reprogrammable, variable effect weapons**
  - **Penetrating ISR**
    - **Space sensing**
    - **Low probability of detection platforms**
  - **Battle Management Command, Control, & Communications (BMC3)**
    - **Predictive Battlespace Awareness**
    - **Long range, high throughput communications (e.g., space communications, Networked operations, & other existing fire control quality comms)**
    - **Integrated Joint and National data collection, multi-spectral fusion, and knowledge management**

LRGPE Capability Class II: Rapid Strategic Effects

- **Objective: Generate strategic effects in high-threat environment & defeat/dismantle the critical anti-access elements**

- **Operational Responsiveness: 2 to 48 Hours (Postured)**

- **Target classes of primary interest *(illustrative only)***
  - **Hardened, mobile, and fixed infrastructure (e.g., BMC3 installations)**
  - **Mobile and fixed long range IADS elements**
  - **Mobile and fixed TBM launchers**
  - **WMD storage**
  - **Massed opposition forces**
  - **Long range anti-access maritime defenses**

- **Quantity of strike effects (volume): 200-1000**

LRGPE Capability Class II: Rapid Strategic Effects (Cont.)

- Contributing concepts
  - Weapons delivery
    - Supersonic/hypersonic platforms
    - Surface & Sub-Surface Launch for long range weapons
    - Electronic/Infrastructure Attack
    - High payload, survivable delivery
  - Advanced munitions
    - Agent defeat weapons
    - Weapons Capable Against Hard and deeply buried targets
    - Directed energy (e.g., tactical laser and high powered microwave)
    - Long range, in-flight reprogrammable, variable effect weapons
    - Area suppression/dominance weapons
  - Penetrating ISR
    - Space sensing
    - Low probability of detection platforms
    - Persistent surveillance of critical mobile targets
    - Shooter-as-sensor
  - Battle Management Command, Control, and Communications (BMC3)
    - Predictive Battlespace Awareness
    - Long range, high throughput communications (e.g., space communications, Networked operations, & other existing fire control quality comms)
    - Integrated Joint and National data collection, multi-spectral fusion, and knowledge management
    - Coordinate command and control of joint fires
    - Time sensitive targeting
      » Rapid weapon-target pairing to achieve desired effect
      » Near-real time mission planning
      » Automated target recognition

LRGPE Capability Class III: Persistent Theater Dominance

- **Objective: Disrupt anti-access elements, attack offensive capability & prepare theater for follow-on forces in a moderate threat environment**

- **Operational Responsiveness: 10 hours to 10 days+ (Postured)**

- **Target classes of interest** *(illustrative only)*
  - **Hardened, mobile, and fixed infrastructure (e.g., BMC3 installations)**
  - **Mobile and fixed long range IADS elements**
  - **Mobile and fixed TBM launchers**
  - **WMD storage**
  - **Opposition forces: massed, dispersed, and mobile**
  - **Long range anti-access maritime defenses**

- **Quantity of strike effects (volume): 1000-10,000**

- **Contributing concepts**
  - **Weapons delivery**
    - **Surface & Sub-Surface Launch for long range weapons**
    - **Electronic/Infrastructure Attack**
    - **High payload, survivable delivery**
  - **Advanced munitions**
    - **Agent defeat weapons**
    - **Directed energy (e.g., tactical laser and high powered microwave)**
    - **Long range, in-flight reprogrammable, variable effect weapons**
    - **Area suppression/dominance weapons**
  - **Penetrating ISR**
    - **Space sensing**
    - **Persistent surveillance of large numbers of mobile targets**
    - **Shooter-as-sensor**
  - **Battle Management Command, Control, and Communications (BMC3)**
    - **Predictive Battlespace Awareness**
    - **Long range, high throughput communications (e.g., space communications, Networked operations, & other existing fire control quality comms)**
    - **Integrated Joint and National data collection, multi-spectral fusion, and knowledge management**
    - **Coordinate command and control of joint fires**
    - **Time sensitive targeting**
      - » **Rapid weapon-target pairing to achieve desired effect**
      - » **Near-real time mission planning**
      - » **Automated target recognition**

Cross-Class Enablers

- **Global Information Grid**

- **Joint BMC4ISR**

- **Stealth & survivability enhancements**

- **Multi-spectral sensor fusion**

- **Knowledge management & decision support**
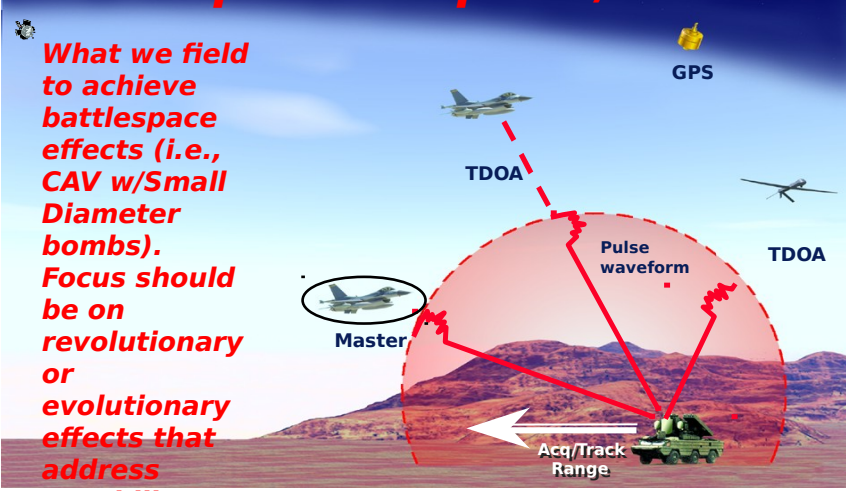
- **Automated target recognition**

**Examples Of Cross-class Enablers
Of LRGPE Effects**

Concept Description Template

Concept Description/Picture

What we field to achieve battlespace effects (i.e., CAV w/Small Diameter bombs). Focus should be on revolutionary or evolutionary effects that address capability gaps.

GPS

TDOA

TDOA

Pulse waveform

Master

Acq/Track Range

Include Very Top Level DOTMLPF & Cost Implications In this Box

Measures of Effectiveness

TIME TO CREATE EFFECTS

Opt 1

Opt 2

Opt 3

PERSISTENCE

VOLUME *Include warfighter contributions in terms of persistence/volume/time to create effects?*

Top Level Summary of Enabling Technologies
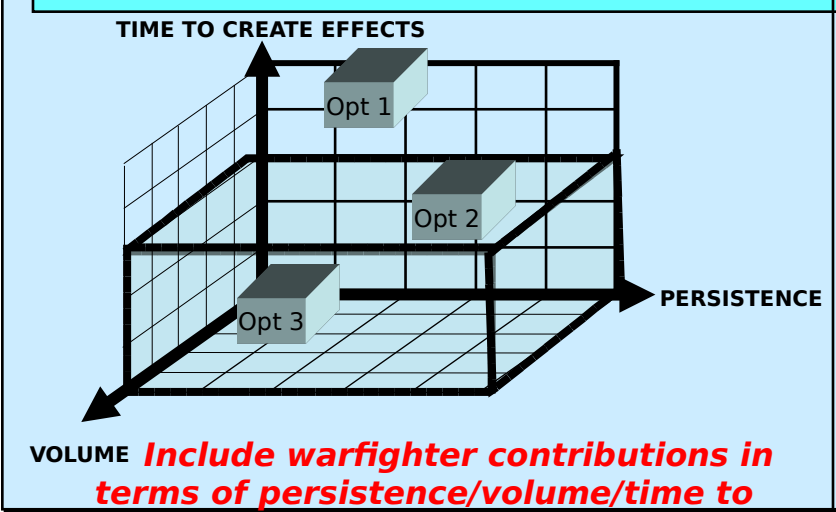
What technologies come together to provide technological concept that enables battlespace effects that address joint gaps?

DOTMLPF Food For Thought

- **<u>Doctrine</u>:** Can CONOPs/TTP be well-defined so that the concept can be employed easily/effectively within the existing force structure? Is it possible for two or more services, through joint CONOPs/TTP, to make even more efficient/effective use of the concept? Can the concept enable the huge investments made in sensor, shooter and C4ISR capabilities to be more interoperable to provide the warfighting CINCs with more capability options? Will the existing/developing service and/or joint doctrine need revisiting?

- **<u>Organization</u>:** Napoleon's use of independent corps formations was considered a revolutionary organizational breakthrough that led to rapid, dramatic improvements in warfighting capabilities. Will the concept under consideration lead to any such improvements in organizational warfighting structure? Or might it complicate that structure? Will the concept require organizational change to operate effectively/efficiently?

- **<u>Training</u>:** Does institutionalized training exist for the concept? Can training be provided at a reasonable cost? Can this training be provided via industry or commercial vendors at lower cost than organically? Does the concept foster joint experimentation, training and operational lessons to include joint ops concepts, command & control structures, and capabilities? What changes in training will be required to implement this concept/technology?

DOTMLPF Food For Thought (Cont.)

- **Materiel:** Does the concept fit well into the warfighters' planned operational architecture? Is the capability provided expandable, transportable, scalable to fit future changes in warfighter needs? Is it interfaceable/ interoperable with other emerging/evolving capabilities? Is it cost-effective? Is it an enabler of other sensor, shooter, BMC4ISR capabilities? Is it a force multiplier? Does it enhance interoperability/integration capability shortfalls that provide the joint warfighter with capabilities that strengthen the ability to create right-volume, persistent and timely war-winning battlespace effects? Does it drive down risks to man/machine?

- **Leadership:** Can DoD leadership be expected to understand the value of the concept and serve as an advocate? Will the concept aid in decision-making, in integrating forces, in enabling the more effective/efficient use of force structure? Does it provide the leadership with a greater number of warfighting options and/or flexibility in use of capabilities?

- **Personnel:** In this day and age of doing more with less, does the concept help people do their jobs more effectively and/or easier? Does is reduce the personnel tempo? Is it a concept that will have personnel that use it serve as its advocate? Does it foster jointness, interoperability, cohesiveness that make jobs easier/more effective?

- **Facilities:** Does the concept drive large facility requirements/costs…or help avoid them?

Measures of Effectiveness

- **Time**
  - **The minimum length of time that can be expected between initial alert or tasking and generation of the desired effect**
  - **Min-Hrs-Days-Wks—Time for capabilities to generate effects**

- **Volume**
  - **Sufficient quantities of effects-creating devices to create and maintain desired effects**
  - **Small-scale/large-scale, precision/general purpose, space/air/combo**

Measures of Effectiveness (Cont.)

- **Persistence**
  - **Ability to maximize the duration and environmental scope in which we hold targets or objectives at risk or generate desired effects on US timelines**
  - **Quick to enduring...forces tailored to warfighter needs**

- **Cost**
  - **Joint Integrated Assessments--Cost-Schedule-Performance Trades**
  - **Best Bang for the Buck Analyses**

Technology Description Template

Technology Description/Picture	*Mission & Characteristics*
LRGPE Capabilities Supported	• *Technology Availability Date* • *Acquisition & Deployment*

Conclusions

- **LRGPE requires integrated capabilities**

- **Capability-based approach employed**

- **Desire input from industry partners**